Photonics coming shortly...

PÔLE OPTIQUE & PHOTONIQUE

Let there be light!

Photonics for the XXIst century will be like electronics for the XXth century! There is no need to be a soothsayer to predict the future of this science of light that will once again revolutionise digital technologies. Provence has a good start at the heart of this movement! The activity has been represented in Provence since 2000 with the POPsud network, has been selected as a cluster, and has already made the region one of its future bastions. An avant-garde position that could earn it many laurels since, as Emmanuelle Rouan, leader of the OPTITEC specialty centre explains "it is a science for which France has not yet become fully aware of the potential": it is applicable in health, space, defence, the environment, industries, and no activity will be able to remain unaffected by this specialty.

Emmanuelle Rouan

> Optitec… well ahead of the field

Emmanuelle Rouan: The photonics cluster is organised around the POPsud association that since 2000 has federated all industrial and academic players investing in research in optics and photonics in the PACA region. The association initiated OPTITEC in 2002-2003, a project to create a regional and European innovation cluster in the optics-photonics field. OPTITEC acted as the genuine initiator of the cluster.
The network of private and public players involved includes more than 30 public research laboratories and 77 companies and other partners (including universities and the EGIM (Ecole Généraliste d'Ingénieurs à Marseille - Marseille General Engineering School).

> Panoramic view for the cluster

The development themes in the photonics cluster continue from the POPsud network and the OPTITEC project. The cluster is based on three main phases:
- creation of a community including research workers and industrialists, and organised around photonics and developing cooperation between research and industry through effective actions;
- development of projects in common. At the moment, 17 projects selected by the POPsud strategic council have requested financing with territorial communities to set up about fifteen mutualised technological platforms (for a total of about 7.5 M€);
- deployment of the OPTITEC project specialised in optics and photonics, and for which the specific nature is to associate photonics, electronics and mechanics as multi-disciplines at the heart of complex systems ...

> Big bang of applications… and job boom!

Themes related to this project include optics, photonics, imagery, integration and engineering and therefore open up the path to many applications concerning space, energy, the sea, microelectronics, heath and life sciences, the environment and everything related to industrial processes, etc.
Due to the potential number of applications, photonics that already accounts for nearly 4000 jobs in the region (including 1 500 research workers in public laboratories) is expected to create 3000 jobs over the next 3 years, and particularly very highly qualified jobs.

Play the Photonics card for all it's worth

if the XXth century was the century of electrons, the XX1st will be the century of photons…
Photonics is now a critical technology and results in genuine scientific, technological and industrial revolutions.
It is a digital and multi-discipline technology, and relates to the emission, manipulation, detection and analysis of light in the broad sense, in other words electromagnetic radiation, and its basic element the photon.
Photonics is at the heart of technological and industrial convergence, combining microelectronics and information and communication technologies, a combination that could generate new innovation sectors.
The photonics field is vast, varying from optical components to instrumental image processing, and including all systems with an "optical core" and based on data processing, mechanics, electronics, etc.
Lasers, mirrors, lenses, power components, optical fibres, diodes, micro-components with optical functions, sensors, imagers, screens and optical storage are all at the heart of technologies used in photonic components that have a very high added value in complex systems.

> The PACA Region: 20% of France's photonics brain power

The PACA region is considered as being the second most important optics region in France, with a GNP estimated at 720 M€. The cluster is based on recognised regional skills and particularly a force representing about 20% of the national R&D potential, through major laboratories and research institutions, CNRS, INRIA, IFREMER and CEA, 5 universities, leader companies (Alcatel Space, SESO, CYbernetix, Optis, ST-Microelectronics, IBS…) and user companies (Eurocopter, Gemplus, etc.).

Furthermore, the region is specialised in photonics in extreme media. It has unique skills in four fields: in space (with Alcatel Space in Cannes), submarine environment (with IFREMER), defence (with Eurocopter, Dassault, DCN) and in the energy field (with CEA and ITER).

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POP SUD
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> The photonics headquarters will be in Château-Gombert

The idea is not simply to encourage endogenic economic growth (predicted to be about 20% a year) and exogenic growth in this sector, but also like POPsud, to work with potential user companies of photonics technology and consequently to benefit from close links between basic and applied research and applications.

In projects more specifically aimed at start-up companies, the idea of creating a company nursery (the Hôtel Technoptic – temporary offices) dedicated to optics germinated in the Marseille Provence Technical science park in Château-Gombert, in partnership with Marseille Innovation and the Marseille Urban Community. It includes plans to set up a common resource pool including basic equipment essential for young companies but for which investment costs are very high.

> A fertile geographic organisation …

The photonics cluster now has wide local and international visibility due to its regional consistency. The geographic layout including the network hub located at the heart of the Château-Gombert science park, two nodal points (the Marseille Metropolitan area and Cannes with Alcatel Space acting as spear head) - Sophia-Antipolis, and Toulon and the Aix district, makes it possible to nourish the central hub while irrigating the entire region.

> An influence outside the region

There are not many regions in France like PACA, that have successfully federated their skills in this field. Very often, photonics has been integrated into clusters with wider problems.
At the moment, the idea is to associate our cluster with “ORA”, the photonics network in the Rhône-Alpes Region, which has complementary skills. This network concentrates more on optics components, while the PACA region is specialised in complex optics and photonics systems. This partnership should enable us to become a cluster with a European and also a worldwide influence. Many industrialists and small and medium sized companies are working in the photonics field and necessarily form part of an international logic. At the present time, 35% of their activity is international.